

CLAIMS

- 1 1. An integrated optic polarization splitter comprising:
  - 2 an input waveguide element that inputs an optical signal having TE and
  - 3 TM components;
  - 4 a vertically oriented waveguide element coupled to said input waveguide
  - 5 element that propagates said TM component of said optical signal, said vertically
  - 6 oriented waveguide element including a plurality of core layers; and
  - 7 a horizontally oriented waveguide element coupled to said input
  - 8 waveguide element that propagates said TE component of said optical signal.
- 1 2. The integrated optic polarization splitter of claim 1, wherein said vertically
- 2 oriented waveguide element and said horizontally oriented waveguide element
- 3 intersect or nearly intersect before the separation of the vertically and
- 4 horizontally oriented waveguide sections.
- 1 3. The integrated optic polarization splitter of claim 1, wherein said core layers
- 2 comprise two core layers.
- 1 4. The integrated optic polarization splitter of claim 1, wherein said core layers
- 2 comprise three layers.
- 1 5. A method of forming an integrated optic polarization splitter, said method
- 2 comprising:
  - 3 providing an input waveguide element that inputs an optical signal having
  - 4 TE and TM components; and
  - 5 forming a vertically oriented waveguide element coupled to said input
  - 6 waveguide element that propagates said TM component of said optical signal,
  - 7 said vertically oriented waveguide element includes a plurality of core layers; and
  - 8 forming a horizontally oriented waveguide element coupled to said input
  - 9 waveguide element that propagates said TE component of said optical signal.
- 1 6. The method of claim 5, wherein said vertically oriented waveguide element
- 2 and said horizontally oriented waveguide element intersect or nearly intersect
- 3 before the separation of the vertically and horizontally oriented components.

1 7. The method of claim 5, wherein said core layers comprise two layers.

1 8. The method of claim 5, wherein said core layers comprise three layers.

1 9. An optical waveguide splitter comprising:

2 a pair of waveguide elements with a first waveguide element having a  
3 horizontal orientation and a second waveguide element having a vertical  
4 orientation formed from a plurality of waveguide core layers, wherein said first  
5 and second waveguide elements are intersected or nearly intersected at one end of  
6 the structure and separated at the other end of the structure with the transition  
7 there between made to be adiabatic;

8 said waveguide elements receive an optical signal having both a TE  
9 component and a TM component, wherein said TE component propagates along  
10 the horizontally oriented waveguide element and said TM component propagates  
11 along the vertically oriented waveguide.